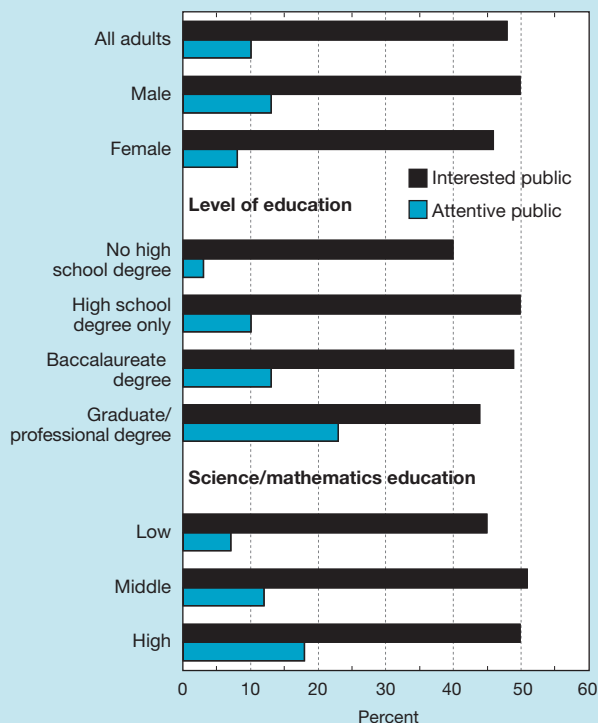


Figure 7-3.
Public attentiveness to science and technology issues, by sex and level of education: 2001



NOTES: "Attentive" public are people who (1) express high level of interest in a particular issue; (2) feel well informed about that issue, and (3) read a newspaper on a daily basis, read a weekly or monthly news magazine, or frequently read a magazine highly relevant to the issue. "Interested" public are people who express high level of interest in a particular issue but do not feel well informed about it. The attentive public for science and technology is a combination of the attentive public for new scientific discoveries and the attentive public for new inventions and technologies. Anyone who is not attentive to either of these issues, but who is a member of the interested public for at least one of these issues, is classified as a member of the interested public for science and technology. Survey respondents were classified as having a "high" level of science/mathematics education if they took nine or more high school and college math/science courses. They were classified as "middle" if they took six to eight such courses, and "low" if they took five or fewer.

See appendix table 7-8. Science & Engineering Indicators – 2002

People who have knowledge of basic science facts, concepts, and vocabulary may have an easier time following news reports and participating in public discourse on various issues pertaining to S&T. Even more important than having basic knowledge may be an appreciation for the nature of scientific inquiry. Understanding how ideas are investigated and analyzed can be valuable for staying abreast of important issues, participating in the political process, and assessing the validity of other types of information. (See "Science Fiction and Pseudoscience.") According to a science journalist:

Without a grasp of scientific ways of thinking, the average person cannot tell the difference between science based on real data and something that resembles science—at least in their eyes—but is based on uncontrolled experiments, anecdotal evidence, and passionate assertions...[W]hat makes science special is that evidence has to meet certain standards (Rensberger 2000, p. 61).

The NSF survey contains a series of questions designed to assess public knowledge and understanding of basic science concepts and terms. The survey includes 18 such questions: 13 true or false, 3 multiple choice, and 2 open-ended questions that asked respondents to define in their own words *DNA* and *molecule*. In addition, the survey includes questions designed to test public understanding of the scientific process, including knowledge of what it means to study something scientifically, how experiments are conducted, and probability.

Understanding Science Facts, Concepts, and Vocabulary

The percentage of correct responses to most of the NSF survey questions pertaining to basic science facts, concepts, and vocabulary has remained nearly constant. (See appendix table 7-9.) For example, more than 70 percent of those surveyed knew that:

- ♦ Plants produce oxygen.
- ♦ The continents have been moving for millions of years and will continue to move.
- ♦ Light travels faster than sound.
- ♦ Earth goes around the Sun (and not vice versa).
- ♦ Not all radioactivity is manmade.

In contrast, about half the respondents knew that:

- ♦ The earliest humans did not live at the same time as dinosaurs.
- ♦ It takes Earth one year to go around the Sun.
- ♦ Electrons are smaller than atoms.
- ♦ Antibiotics do not kill viruses.
- ♦ Lasers do not work by focusing sound waves. (See figure 7-4 and appendix table 7-10.)

A strong, positive relationship exists between number of correctly answered questions and level of formal education, number of science and mathematics courses completed, and attentiveness to S&T. For example, those who did not complete high school answered an average of 50 percent of the questions correctly compared with scores of 63 percent for high school graduates, 77 percent for college graduates, and 80 percent for those who earned graduate or professional degrees. (See appendix table 7-9.)

In addition, only 22 percent of respondents were able to define *molecule*, and 45 percent gave an acceptable definition for *DNA*.¹⁰ Although the percentage of correct responses

¹⁰These percentages are higher than those recorded in past NSF surveys. The increase may be attributable to a different technology being used to record responses to open-ended questions. For the first time, in 2001, respondents' answers were recorded on audiotape instead of being manually typed into a computer by the interviewer. Thus, the coders worked from sound files of actual responses rather than hand-typed text. Probably as a result of having more complete information from each respondent, more respondents were classified as having provided an acceptable definition of these terms. See Miller and Kimmel (2001) and Duffy, Muzzy, and Robb (2001).